REMARKS

Claims 1-31 are pending. Claims 1, 3, 8, and 12-14 are amended. Support for the amendments can be found in the Specification as filed at least in paragraphs [0011], [0043], [0046], [0050], and originally filed Claims 8 and 12. Claims 3 and 14 have been amended to include the angstrom symbol as when they were originally filed in order to correct a typographical error in the last Response to Office Action. No new matter has been added. Claims 9 and 21-31 are canceled. Applicant requests reconsideration and reexamination of the claims as amended.

Specification

The ABSTRACT has been amended to direct the content thereof to the elected invention. No new matter has been added.

Rejection under 35 U.S.C. 112

Claims 1-20 are rejected under 35 U.S.C. 112, first paragraph. The Examiner alleges that the heating step is not disclosed as being performed at atmospheric pressure and that "at about atmospheric pressure" is new matter. Applicant respectfully directs the Examiner's attention to paragraph [0012], which states in part, "the processes of the present invention can occur at or about atmospheric pressure, which removes the need for heavily equipped, high-pressure systems." Applicant requests that the rejection of Claims 1-20 under 35 U.S.C. 112, first paragraph, be withdrawn.

Claims 13 and 14 are rejected under 35 U.S.C. 112, second paragraph as being indefinite. Claims 13 and 14 have been amended to clearly delineate the claimed invention. Claims 13 and 14 are in condition for allowance.

Rejection under 35 U.S.C. 103

Claims 1, 3-9, 12, and 14-17 are rejected under 35 U.S.C. 103(a) as being unpatentable over Yang (USPN 5,500,243). Claims 2, 11, 13, 19 and 20 are rejected under 35 U.S.C. 103(a) as being unpatentable over Yang in view of Ouellet (USPN 5,470,798). Claims 1, 3-10, 12 and 14-18 are rejected under 35 U.S.C. 103(a) as being unpatentable over Miyashita et al. (USPN 5,380,608) in view of Yang. Claims 2, 11, 13, 19 and 20 are rejected under 35 U.S.C. 103(a) as being unpatentable over Miyashita et al. in view of Yang and further in view of Ouellet. Applicant overcomes the rejections as follows.

Claim 1 sets forth, *inter alia*, "heating said first layer at about atmospheric pressure to a first process temperature for a first time duration to cause said first layer to outgas and form a first processed layer of SiO_2" and "heating said first processed layer of SiO_2 at about atmospheric pressure to a second process temperature for a second time duration to form a cured layer of SiO_2."

Similarly, Claim 12 sets forth, *inter alia*, "heating said first layer of SOG to a first process temperature at about atmospheric pressure for a first time duration to cause said first layer of SOG to outgas and form a first layer of SiO_2" and "heating said outgassed layer of SOG and said first layer of SiO_2 to a second process temperature at about atmospheric pressure for a second time duration to cure said outgassed layer of SOG and said first layer of SiO_2."

Applicant could find no teaching or suggestion in Yang including all the elements of Claims 1 and 12. In particular, Applicant submits that Yang does not disclose or suggest any process pressure for the disclosed heating steps. Instead, Yang discloses the use of a "reducing atmosphere" during a curing step. For example, Yang discloses the following:

> The heating is done in the presence of a reducing atmosphere. (Yang, col.2, ll.35-40) (emphasis added).
>
> The heating step can be carried out in the heating chamber by first vacuuming the heating chamber and then producing a reducing atmosphere in the heating chamber by flowing hydrogen gas along with a second gas through the heating chamber. (Yang, col.2, line 66-col.3, line 3).
>
> [W]hen the process is performed in a reducing atmosphere, such as Nitrogen or Argon, a substantial amount of carbon is retained in the film and Si-C is formed at high temperatures (≈900°C. - 1100°C.). (Yang, col.3, ll.11-15).
>
> While the invention has been described with reference to a reducing atmosphere, such as nitrogen, and a Nobel gas atmosphere, such as Argon, it will be clear that the invention is easily adapted to other atmospheres having similar properties such as an ammonia or a methane gas atmosphere. (Yang, col.3, ll.40-44).

The Examiner states in part that although "Yang lacks a specific teaching that the pressure used during heating is about atmospheric pressure," it would have been obvious for one having ordinary skill in the art to have performed the method of Yang at atmospheric pressure since "Yang lacks a teaching of using pressures other than atmospheric pressure and

because atmospheric pressure is the simplest and most economical pressure to use in terms of equipment and material needs, power supply, etc."

Applicant submits that the Examiner is using impermissible hindsight and making an assumption regarding the use of atmospheric pressure for oxide formation as disclosed in Yang and requests that the Examiner cite a reference in support of the position that "atmospheric pressure is the simplest and most economical pressure to use in terms of equipment and material needs, power supply, etc." in the formation of oxide layers.

Furthermore, Applicant submits that Yang teaches away from the formation of a first layer of SiO_2 during a first heating step. Yang discloses the following:

> After the spin-on application, the film of the substrate is preheated in step 103 at a suitable temperature depending on the composition of the spin-on solution. . . . . The purpose of this preheat is to remove substantially all of the solvents by evaporation. Next, the film is subject to higher temperatures, in step 104, in order to convert the coating to silicon dioxide when a silicon-containing solution is initially applied. (Yang, col.2, ll.35-40) (emphasis added).

Thus, Yang discloses that a preheat step is used to remove solvents by evaporation and then the film is converted to silicon dioxide during a subsequent heating step. Accordingly, Yang teaches away from "heating said first layer at about atmospheric pressure to a first process temperature for a first time duration to cause said first layer to outgas and form a first processed layer of SiO_2" as recited in amended Claim 1, and "heating said first layer of SOG to a first process temperature at about atmospheric pressure for a first time duration to cause said first layer of SOG to outgas and form a first layer of SiO_2" as recited in amended Claim 12.

Because Yang does not disclose or suggest all the elements of Claims 1 and 12, Claims 1 and 12 are patentable over Yang.

With regard to Claims 1 and 12, Applicant has reviewed the disclosure of Miyashita et al. and has determined that since Yang does not teach the formation of an SiO_2 layer in the same manner as in the present invention, Yang cannot cure the deficiencies of Miyashita et al. to arrive at Applicant's invention. Accordingly, Claims 1 and 12 are also allowable over Miyashita et al. in view of Yang.

Claims 2-8 and 10-11 depend from Claim 1 and are therefore allowable of at least the same reasons as Claim 1 as well as for the novel features which they add. Claims 13-20

depend from Claim 12 and are therefore allowable for at least the same reasons as Claim 12 as well as for the novel features which they add.

CONCLUSION

For the above reasons, pending Claims 1-8 and 10-20 are now in condition for allowance and allowance of the application is hereby solicited. If the Examiner has any questions or concerns, the Examiner is hereby requested to telephone Applicant's Attorney at (949) 752-7040.

Certification of Facsimile Transmission

I hereby certify that this paper is being facsimile transmitted to the U.S. Patent and Trademark Office on the date shown below.

Tina Kavanaugh July 7, 2004

Respectfully submitted,

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